WHAT IS CLAIMED IS:

1. A suspension system configured to be coupled to a frame of an ATV, the suspension system comprising:

a torsion control mechanism having a left connecting structure and a right connecting structure, the torsion control mechanism defining an axis of rotation passing through the left and right connecting structures;

a left swing arm fixedly connected to the left connecting structure; and

a right swing arm fixedly connected to the right connecting structure,

wherein the right and left swing arms are pivotable about the rotation axis defined by the torsion control mechanism.

2. A suspension system according to claim 1, wherein the torsion control mechanism includes a transversal arm rigidly mounted to the frame of the ATV.

3. A suspension system according to claim 1, wherein the left and right swing arms are made of steel.

4. A suspension system according to claim 1, wherein the left and right swing arms are made of aluminum.

5. A suspension system according to claim 1, wherein each swing arm is capable of pivotal movement about the rotation axis relative to the other swing arm.

6. A suspension system according to claim 5, wherein a maximum angle of relative rotational displacement of the left swing arm with respect to the right swing arm is about 5°-25°.

7. A suspension system according to claim 6, wherein the maximum angle of relative rotational displacement is about 5°-10°.

8. A suspension system according to claim 7, wherein the torsion control mechanism includes a torsionally flexible element.

9. A suspension system according to claim 1, wherein the torsion control mechanism includes a damping device coupled to each of the left and right swing arms.

10. A suspension system according to claim 9, wherein the torsion control mechanism includes a torsion bar fixedly connected to and extending between each of the left and right swing arms, wherein the torsion bar is extends within the damping device.

11. A suspension system according to claim 1, wherein the torsion control mechanism includes a clutch assembly coupled to each of the left and right swing arms.

12. A suspension system according to claim 11, wherein the torsion control mechanism includes a torsion bar connected to and extending between each of the left and right swing arms, wherein the torsion bar extends within the clutch assembly.

13. A suspension system according to 11, wherein the clutch assembly includes a pair of clutch members coupled to respective swing arms.

14. A suspension system according to claim 13, wherein each of the clutch members includes a respective interlocking structure cooperable with the interlocking structure of the other clutch member, at least one of the pair of clutch members being movable relative to the other clutch member such that the interlocking structures are movable between an interlocked, non-rotating relation and a spaced relation.

15. A suspension system according to claim 1, wherein the left swing arm and the right swing arm are generally transverse to the torsion control mechanism.

16. A suspension system according to claim 1, wherein the torsion control mechanism includes a torsionally flexible element.

17. A suspension system according to claim 16, wherein each of the left and right swing arms pivots about the axis of the torsionally flexible element to define a pivot plane that is normal to the axis of the torsion control mechanism.

18. A suspension system according to claim 17, wherein

the torsional control mechanism includes left and right link arms fixedly connected to respective left and right connecting structures,

the left and right link arms are selectively coupleable to each other, and

the torsionally flexible element is connected to each of the left and right swing arms such that the torsion control mechanism is capable of selectively operating in an independent mode wherein the left and right link arms are uncoupled from each other and the swing arms are provided with a degree of relative pivotal movement therebetween by a torsional deflection capability of the torsionally flexible element; and a dependent mode wherein the left and right link arms are coupled to each other and the swing arms are substantially rigidly interconnected via the coupled link arms.

19. A suspension system according to claim 16, wherein the torsionally flexible element comprises a coil spring with ends thereof rigidly connected to respective swing arms.

20. A suspension system according to claim 16, wherein the torsionally flexible element comprises a torsion bar, the torsion bar being non-rotatably connected to the left and right swing arms at respective ends of the torsion bar.

21. A suspension system according to claim 20, wherein the torsion control mechanism includes at least one of a bearing and a bushing to rotatably support the torsion bar.

22. A suspension system according to claim 20, wherein each of the left and right swing arms includes a housing through which the torsion bar extends.

23. A suspension system according to claim 22, further comprising a flange cover coupled to an outer side of each housing, each flange cover being connected to an end of the torsion bar.

24. A suspension system according to claim 20, wherein each of the left and right swing arms is capable of relative pivotal movement about the rotation axis relative to the other of the swing arms through a range of pivotal movement defined by a torsional deflection limit of the torsion bar.

25. A suspension system according to claim 24, wherein the torsional deflection limit of the torsion bar is within an elastic deformation limit of the torsion bar.

26. A suspension system according to claim 1, wherein the torsion control mechanism is configured to provide a degree of relative pivotal movement between the left and right swing arms and wherein the torsion control mechanism is configured such that the degree of relative pivotal movement provided thereby is variable.

27. An ATV comprising:

a frame; and

a suspension system coupled to the frame, the suspension system comprising:

a torsion control mechanism having a left connecting structure and a right connecting structure, the torsion control mechanism defining an axis of rotation passing through the left and right connecting structures;

a left swing arm fixedly connected to the left connecting structure; and

a right swing arm fixedly connected to the right connecting structure,

wherein the right and left swing arms are pivotable about the rotation axis defined by the torsion control mechanism.

28. An ATV according to claim27, wherein a maximum angle of displacement of the left swing arm with respect to the right swing arm is about 5°-25°.

29. An ATV according to claim27, wherein, if the maximum angle of displacement is reached, movement of one of the left and right wheels beyond about 5°-25° will cause movement of the other one of the right and left wheels.

30. An ATV according to claim27, further comprising a differential mounted on the frame, the differential being coupled to the left swing arm and the right swing arm using half shafts including one of plunging joints and universal joints.

31. An ATV according to claim30, wherein each of the left and right swing arms includes a rear housing having an inner side to which a respective one of the left and right half shafts is coupled.

32. An ATV according to claim31, wherein each rear housing includes an outer side to which a respective one of left and right wheels is coupled.

33. An ATV according to claim27, wherein the torsion control mechanism includes a torsionally flexible element.

34. An ATV according to claim33, wherein the torsionally flexible element is a torsion bar being non-rotatably connected to the left and right swing arms at respective ends of the torsion bar.

35. An ATV according to claim34, further comprising a transversal arm that houses the torsion bar, the transversal arm being fixedly attached to the frame.

36. An ATV according to claim34, wherein the torsion bar is transverse to the driving direction of the vehicle.

37. An ATV according to claim27, further comprising a shock absorber connection member provided on each of the left and right swing arms.

38. An ATV according to claim27, wherein the frame comprises:

a first frame member;

a second frame member;

at least a first cross member and a second cross member extending between the first and second frame members to thereby define a closed perimeter with an engine receiving space therein; and

first and second suspension mounting points associated with at least one of the first frame member, the second frame member, the first cross member, and the second cross member,

wherein at least one of the first frame member and the second frame member is positioned substantially along a longitudinal centerline of the frame and extends from the first suspension mounting point to the second suspension mounting point.

39. An ATV according to claim38, wherein the first member is vertically aligned with the second frame member.

40. An ATV according to claim38, wherein each of the first and second frame members and the first and second cross members has a uniform cross section throughout a length thereof.

41. An ATV according to claim38, wherein each of the first and second frame members and the first and second cross members has an identical cross-sectional shape.

42. An ATV according to claim38, wherein one of said first and second frame members is bent toward the other of the first and second frame members proximate one end thereof to thereby provide one of the first and second cross members.

43. An ATV according to claim38, further comprising a rear suspension mounting structure rigidly mounted to one of the first and second suspension mounting points.

44. An ATV according to claim38, wherein each of the first and the second frame members consists essentially of a single beam.

45. An ATV according to claim38, wherein at least one of the first and second frame members consists essentially of a single beam.

46. An ATV according to claim45, wherein the single beam comprises a closed tubular structure.

47. An ATV comprising:

a generally longitudinally extending frame;

forward and rearward pairs of wheel assemblies being longitudinally spaced from one another, each of the pairs of wheel assemblies defining a laterally extending rotation axis about which wheels of the respective pair of forward and rearward wheel assemblies rotate; and

a suspension system including a pair of swing arms, each of said swing arms having a proximal end pivotally connected to the frame for pivotal movement about a laterally extending pivot axis, each of the swing arms having a distal end, each of the distal ends being rotationally coupled to a wheel assembly of one of the forward and rearward pairs of wheel assemblies, wherein:

a length of each swing arm is defined as the distance between the pivot axis of the swing arm and the rotation axis of the respective wheel assembly,

a wheel base length of the ATV is defined as the distance between the rotation axes of the forward and rearward pairs of wheel assemblies, and

a ratio of the swing arm length to the wheel base length ranges from 0.20 to 0.40.

48. An ATV according to claim47, wherein the ratio of the swing arm length to the wheel base length ranges from 0.27 to 0.32.

49. An ATV according to claim47, wherein the swing arms are rear swing arms which are connected to the frame proximate a rear thereof.

50. An ATV according to claim47, wherein the swing arms extend generally rearwardly and outwardly from the frame, the rearward pair of wheel assemblies being rotationally coupled to the distal ends of the respective swing arms such that the wheel assemblies are disposed generally behind the pivot axis of the swing arms.

51. An ATV according to claim47, wherein the pivot axis of the swing arms is disposed above a lower most portion of the frame.

52. An ATV according to claim47, wherein the suspension system includes a torsion control mechanism, the swing arms being coupled thereto.

53. An ATV according to claim52, wherein the torsion control mechanism includes a torsionally flexible element connected to the swing arms.

54. An ATV according to claim53, wherein the torsionally flexible element is a torsion bar extending between the swing arms along the pivot axis and being non-rotatably connected to the swing arms at respective ends of the torsion bar.

55. An ATV according to claim52, wherein the torsion control mechanism is mounted to the lower supporting portion such that the torsion control mechanism is disposed above the lower most portion of the frame.

56. An ATV comprising:

a generally longitudinally extending frame having a lower supporting portion and an upper supporting portion; and

a suspension system having left and right swing arms pivotally connected to the lower supporting portion, the suspension system including a swing arm mounting structure rigidly mounted to the lower supporting portion, the swing arms being pivotally connected to respective ends of the suspension mounting structure for pivotal movement about a laterally extending pivot axis,

wherein the suspension mounting structure is positioned on the lower supporting portion such that the pivot axis is disposed above a lower most portion of the lower supporting portion.

57. An ATV according to claim56, further comprising a torsion control mechanism coupled to the swing arms.

58. An ATV according to claim57, wherein the torsion control mechanism is positioned relative to the lower supporting portion such that an entirety of the

torsion control mechanism is disposed above the lower most portion of the lower supporting portion.

59. An ATV according to claim57, wherein the torsion control mechanism is rigidly attached to an upper most portion of the lower supporting portion.

60. An ATV according to claim57, wherein the frame includes a transverse member extending between the upper and lower supporting portions of the frame, the torsion control mechanism being mounted adjacent an intersection of the transverse member and the lower supporting portion, and the torsion control mechanism being rigidly connected to both.

61. An ATV according to claim59, wherein the torsion control mechanism includes a torsionally flexible element extending along the pivot axis of the swing arms and coupled to the swing arms.

62. An ATV according to claim61, wherein the torsionally flexible element is a torsion bar being non-rotatably connected to the swing arms at respective ends of the torsion bar.

63. A suspension system comprising:

left and right swing arms configured to be pivotally connected to a frame of an ATV; and

a swing arm mounting structure configured to rigidly mount to the frame, the swing arms being pivotally connected to respective ends of the swing arm mounting structure for pivotal movement about a laterally extending pivot axis,

wherein the suspension mounting structure is configured such that the pivot axis is disposed above a lower most portion of the frame.

64. A suspension system according to claim63, further comprising a torsion control mechanism pivotally connected to each of the swing arms.

65. A suspension system according to claim64, wherein the torsion control mechanism includes a torsionally flexible element non-rotatably connected to each of the swing arms.

66. A suspension system according to claim65, wherein the torsionally flexible element is a torsion bar.